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February 25, 2018

David Barfield

CC: Jackie McClaskey, Alan Crane, Zachary Crane, Robert Neeland, Ron Ashworth, John Blackwell, David Blackwell, Mike Yeager, Chris Pinkston, Carlton Bert, Bob Standish, Randy Garrett, Todd Wyckoff, Orrin Feril

Dear Mr. Barfield et al.:

Groundwater flow in the Mystery River drainage area does not flow to Quivira and this area must be removed from all LEMA proposed solutions to the streamflow at Zenith.

As stated in our previous letter dated August 28, 2017, the ground located in the Mystery River drainage area is located in the ARK basin and does not impact the streamflow at Zenith or impair Quivira's water right. As our request for the removal of this area from the LEMA proposal was not honored, we are providing additional evidence to help the GMD5 make the right decision to remove this area. **If the Mystery River drainage area is not removed from the "seahorse" map and proposed LEMA solutions in the next three weeks, we will immediately file suit to put an injunction on the entire process until our issue is resolved.**

Evidence 1: NRCS and U.S. Geological Surveys

As we previously stated, there are U.S. Geological surveys that clearly show the groundwater movement in the Mystery River drainage area is "from the southwest to the northeast." The groundwater does not flow east to Zenith/Quivira. I have provided two examples below from Kansas Geological Survey studies conducted in 1992 and 2005.

Figure 3 below is from the Kansas Geological Survey Mineral Intrusion Report (http://www.kgs.ku.edu/Hydro/Publications/1992/OFR92_25/OFR92-25.pdf). The illustration indicates that "groundwater flow is perpendicular to the contour lines, as shown by the arrows."

Kansas Geological Survey
Mineral Intrusion: Investigation of Salt Contamination of Ground Water in the Eastern Great Bend Prairie Aquifer.

Page 6: "Figure 3 shows our best available estimate of the water table in 1991, with flow lines superimposed on the water elevation contours. The water table slope (or "gradient") and the permeability of the aquifer permit us to estimate the

rate of flow: the linear velocity of a particle of groundwater over much of the area is about 1 foot per day (calculated values range from a few tenths of a foot to several feet per day).”

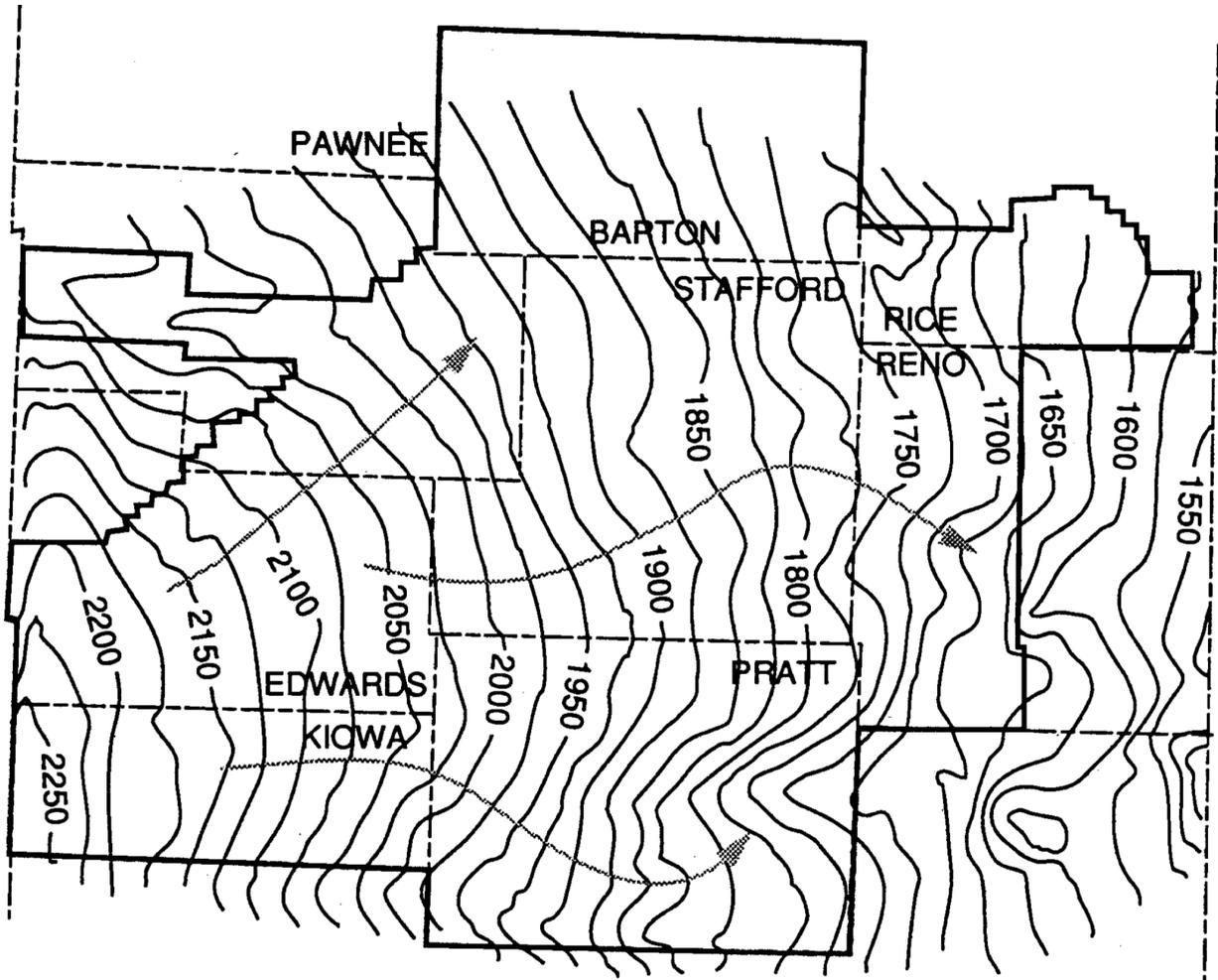


Figure 3. Contours of 1991 water elevations for GMD5. Groundwater flow is perpendicular to the contour lines, as shown by the arrows.

Figure 16 below is from the Kansas Geological Survey Numerical Model of the Middle Arkansas River Subbasin (https://agriculture.ks.gov/docs/default-source/bmt---modeling/mid_ark_final_model_report.pdf?sfvrsn=2). This image reiterates the contour lines and the report states, “the general direction of ground-water flow is from the southwest to the northeast.” The water flowing from the Mystery River drainage area does not flow to Zenith/Quivira.

Kansas Geological Survey
Numerical Model of the Middle Arkansas River Subbasin

Page 27: “The water-level surface for winter (January) 2005 for the active model area is displayed as a contour map in Figure 16. The general direction of ground-water flow is from the southwest to the northeast.”

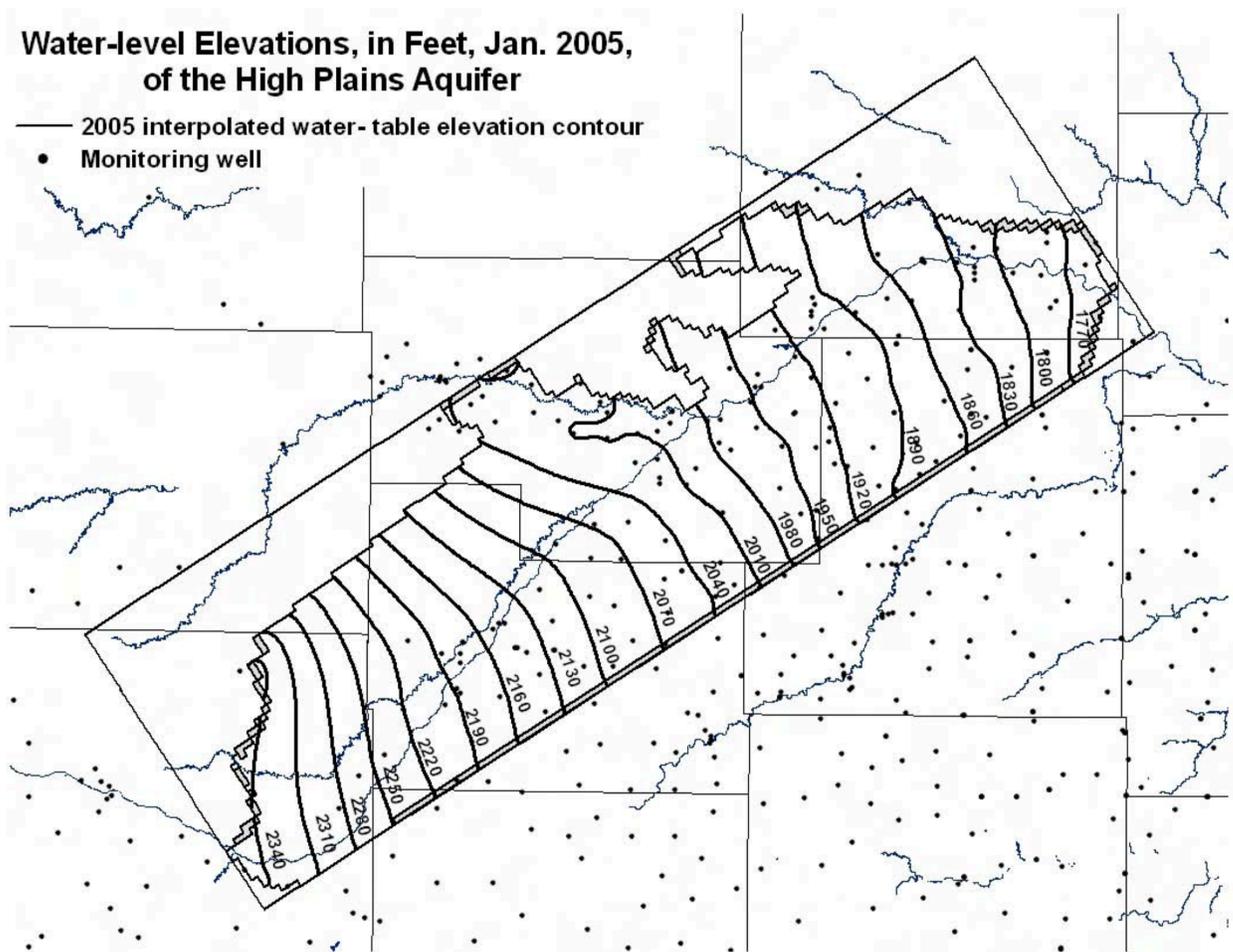
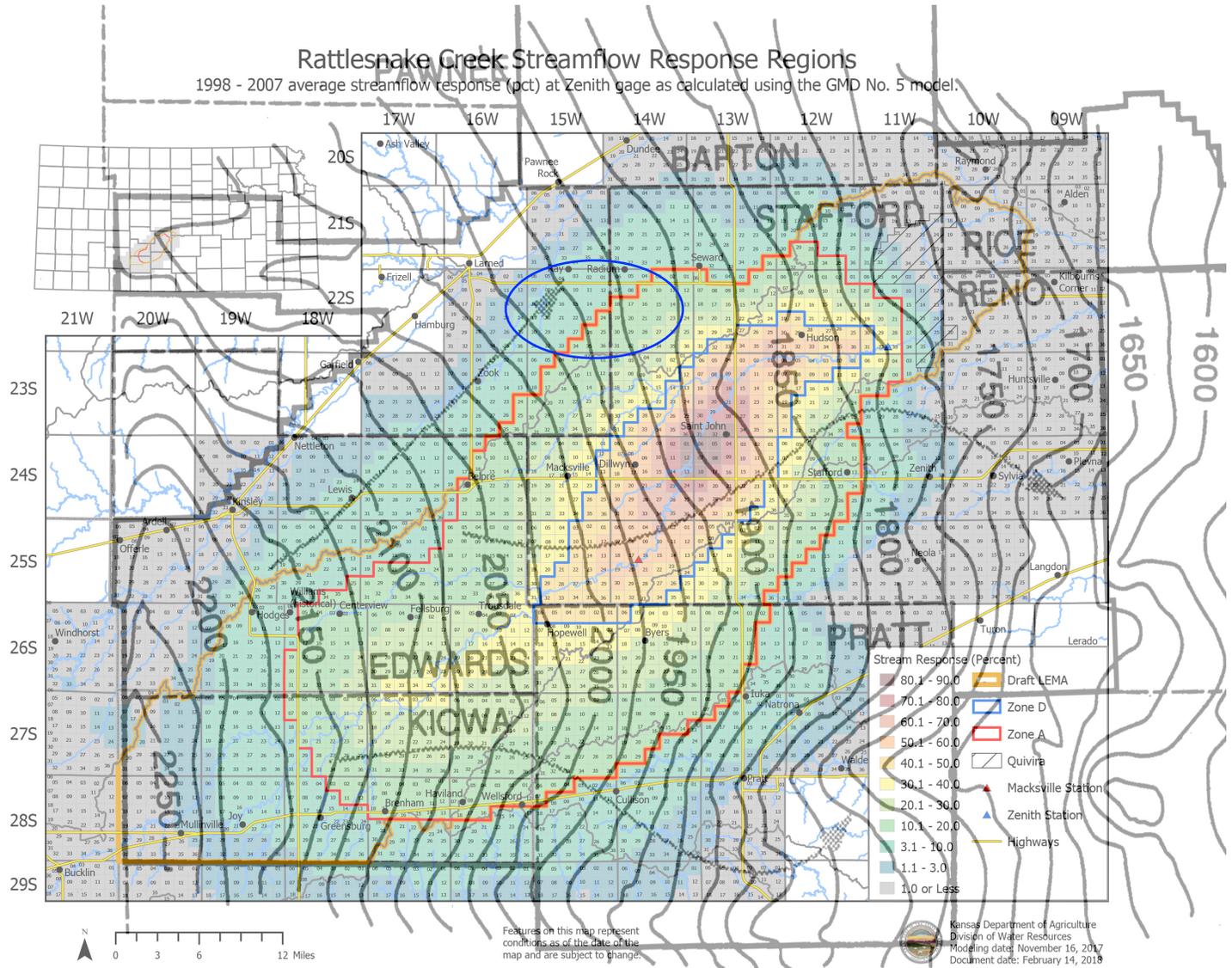


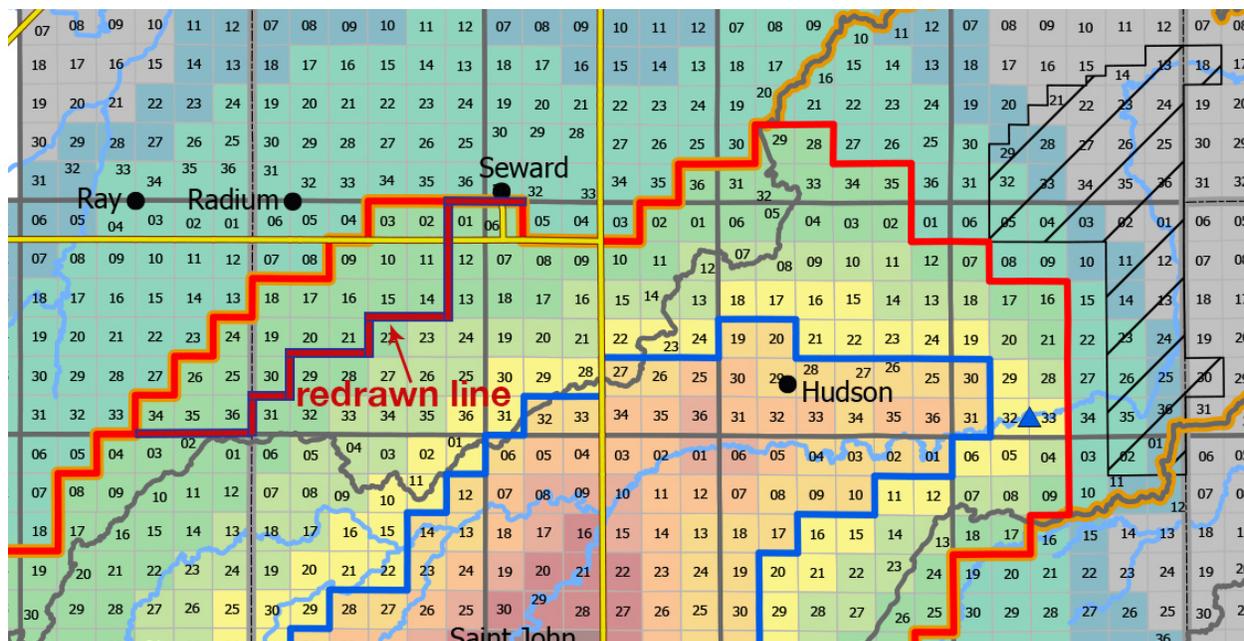
Figure 16. Water-level surface map with locations of observations for January 2005 . Contour intervals are 30 feet.

To make this point more clear, we have superimposed the 1992 map with arrows from the Kansas Geological Survey over the LEMA's proposed Response Region map. It is very obvious that the water from the Mystery River area flows north-northeast. While the water may come close to Quivira, it will not actually flow into Quivira nor will it have any impact on the Zenith gage, and therefore it should not be included in the LEMA proposal.



Final Request

We respectfully request that the lines be moved back to exclude the Mystery River drainage area from the Rattlesnake Creek Streamflow Response Region map and any proposed LEMA action. Please see the map below with the new requested border line.



Again...

1. Previous DWR Chief Engineer David Pope stated that, "... the alternative actions that are currently included in the management program as a method to achieve goals developed by the Partnership if the voluntary measures do not have the desired effect will no longer be applicable to this area [Mystery River drainage area]."
2. He based his decision on that fact that NRCS and U.S. Geological Survey data regarding the basin boundaries and flow of groundwater, which have been presented in this letter, showed that the water in this area flows north-northeast, not towards the Zenith station/ Quivira.
3. Additionally, the current Chief Engineer, David Barfield, determined in his impairment report "that junior groundwater pumping in Rattlesnake Creek impaired the Refuge's water right, to varying degrees, in 26 of the 34 years 1974-2007." There is no mention in his report that any junior pumping in the ARK basin impaired the Refuge's water right, because it didn't. Cutting water back in this area would not fix Quivira's impairment issue.

Further Action

If our request is not heeded, we will be forced to file an injunction on the LEMA process until our issue can be resolved.

Sincerely,

Alan Crane and Rachel Crane